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09/820,465	03/28/2001	Robert James Bays	6527/53616	5652

30505 7590 06/29/2005	EXAMINER
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ART UNIT	PAPER NUMBER
2662	

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Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		09/820,465	BAYS ET AL.
		Examiner	Art Unit	
		Dmitry Levitan	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *20 April 2005*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-37* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-32 and 35-37* is/are rejected.

7) ☒ Claim(s) *33, 34* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Amendment, filed 04/20/05, has been entered. Claims 1-37 remain pending.

Claim Objections

1.   Claim 20 is objected to because of the following informalities: claim limitation

"monitoring operation of the routing system for withdrawal" is unclear, because it is not

understood what has been withdrawn.

2.   Claim 21 is objected to because of the following informalities: claim limitations "the

peers" in line 6, "the first peer" in line 9 and "the path" in line 10. There is insufficient

antecedent basis for these limitations in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

1.   In light of Applicant's Amendment, the rejection of claims in the previous Office action

under the first and second paragraphs of 35 U.S.C. 112 has been withdrawn.

2.   Claims 21-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

Claim 21 limitation "receiving a network destination operably connected to a remote network" is

unclear, because it is not understood what receiving network destination means in the context of

the claim.

Claim 21 limitation "reachability" is unclear, because it is not understood what it means.

Claim Rejections - 35 USC § 103

1.   Claims 1-9, 13, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Thebaut (US 5,889,953) in view of Admitted Prior Art (Background of the Invention, pages 1

and 2).

2.   Regarding claims 1, 4, 6 and 18, Thebaut teaches a routing control device (configuration

policies 115, policy driver 116, trigger 113 and action space 117 on Fig. 6 and 6:49-67, 7:1-2)

comprising:

        a routing control database storing/managing a routing configuration policy (routing

control as part of outbound policies governing the network connectivity 8:18-32, including

routing policy 14:62-67 and 15:1-5, located in memory 192 of the control device PC

implementation, shown on Fig. 15 and 16:54-65) for at least one routing system (one of domains

as shown on Fig. 7 and 8 and 8:24-32);

a routing control module operable to enforce the routing configuration policy (action space 117

on Fig. 6 and 6:49-67, 7:1-2 enforcing configuration policies/traffic engineering 5:14-27) to a

routing system (network 118 on Fig. 6) operably connected thereto.

        Thebaut does not teach implementing an exterior gateway protocol to identify network

routes to network destinations and aggregate network path information for each autonomous

system.

        Admitted Prior Art teaches implementing an exterior gateway protocol (BGP) to identify

network routes to network destinations and aggregate network path information for each

autonomous system (Border Gateway Protocol using the concept of Autonomous Systems for

routing to the networks 1:20-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add implementing an exterior gateway protocol to identify network routes to network destinations and aggregates network path information for each autonomous system of Admitted Prior Art to the system of Thebaut to incorporate a popular protocol into the system.

In addition, regarding claims 6 and 18, Admitted Prior Art teaches implementing BGP for routing path preference evaluation to evaluate the paths across autonomous systems and apply the path preferences to the routing system (evaluator and applicator are inherently part of the routing control device, because the routing control device uses BPG with AS Path metrics to select best path and apply it to the destination network routing 1:20-26).

3.   Regarding claims 2 and 3, Thebaut teaches translating the routing configuration policy into set of rules (active policies generating set of active rules 9:7-21) check the rules for conflict (9:41-50) and modify the configuration of the routing system to resolve the conflict (apply resolution to the source and destination object sets 9:56-60).

4.   Regarding claims 5, 7, 8 and 17, Admitted Prior Art teaches implementing BGP for routing path preference evaluation to evaluate the paths across autonomous systems and apply the path preferences to the routing system (evaluator and applicator are inherently part of the routing control device, because the routing control device uses BPG with AS Path metrics to select best path and apply it to the destination network routing 1:20-26).

In addition, regarding claim 8, every routing system inherently includes a routing table, because routing tables are essential for routing, and inherently injects preferred routing path into the table, because a discovered preferred path should be added to the routing table to be used for routing.

5.   Regarding claim 9, 13 and 19, Admitted Prior Art teaches the routing path evaluator

evaluating a given routing path across an autonomous system according to at least one

performance metric (BGP using AS Path metrics to evaluate an enumeration of the set of

autonomous systems that a data packet travels through as the primary BGP metric).

6.   Claims 10-12, 14, 15, 20 (as best understood) are rejected under 35 U.S.C. 103(a) as

being unpatentable over Thebaut in view of Admitted Prior Art in further view of Beshai (US

6,768,718).

7.   Regarding claim 10-12, Thebaut in view of Admitted Prior Art teaches all the limitation

of the parent claim 6.

Thebaut in view of Admitted Prior Art does not teach load balance traffic.

Beshai teaches load balance traffic among the plurality of peers (load-adaptation method to avoid

overloading links 2:30-45).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to add load balancing of Beshai to the system of Thebaut in view of Admitted Prior

Art to improve the system routing operation, by optimizing the load of the system.

In addition, regarding claims 11 and 12, Beshai teaches routing control database

including an ordered set of peers and routing path evaluation (routing table 1000 of independent

route sets and evaluation of the links capacity 9:18-42) and selection of the preferred path

(minimum penalty path selection 10:24-11-30).

8.   Regarding claim 14, Thebaut in view of Admitted Prior Art does not teach evaluator to

query a central source of path preference data.

Beshai teaches query a central source of path preference data (checking the traffic information against the threshold data, inherently stored at a central source of path preference data 6:37-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add query a central source of path preference data of Beshai to the system of Thebaut in view of Admitted Prior Art to improve the system routing operation, by optimizing the load of the system.

9.   Regarding claim 15, Thebaut in view of Admitted Prior Art does not teach evaluating routing paths with respect to a plurality of metric tests.

Beshai teaches evaluating routing paths with respect to a plurality of metric tests (evaluating route cost 9:27-32 and traffic demand 9:33-42 for each path).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add routing path evaluation with respect to a plurality of metric tests of Beshai to the system of Thebaut in view of Admitted Prior Art to improve the system routing operation, by optimizing the routing path.

10.   Regarding claim 20, Thebaut substantially teaches the limitations of the claim:

a routing control device (configuration policies 115, policy driver 116, trigger 113 and action space 117 on Fig. 6 and 6:49-67, 7:1-2) comprising:

a routing control database storing/managing a routing configuration policy (routing control as part of outbound policies governing the network connectivity 8:18-32, including routing policy 14:62-67 and 15:1-5, located in memory 192 of the control device PC implementation, shown on Fig. 15 and 16:54-65) for at least one routing system (one of domains as shown on Fig. 7 and 8 and 8:24-32).

Thebaut does not teach applying a preferred path to the routing system, wherein it includes at least one remote autonomous system; monitoring operation of the routing system for withdrawal, by one of the peers of the routing system; and applying a next preferred path to the routing system in response to the withdrawal.

Admitted Prior Art teaches implementing BGP for routing path preference evaluation to evaluate the paths across autonomous systems and apply the path preferences to the routing system (evaluator and applicator are inherently part of the routing control device, because the routing control device uses BPG with AS Path metrics to select best path and apply it to the destination network routing 1:20-26).

Beshai teaches monitoring operation of the routing system for withdrawal, by one of the peers of the routing system; and applying a next preferred path to the routing system in response to the withdrawal (monitoring links for traffic change/withdrawal and the resulting overload and redirect the traffic 2:30-45 and 12:34-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add routing path preference across autonomous systems of Admitted Prior Art and monitoring and applying a next preferred path of Beshai to the system of Thebaut to improve the system routing operation, by optimizing the routing path.

11.   Claims 21 (as best understood), 22, 25, 29, 30, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thebaut in view of Beshai (US 6,768,718).

12.   Regarding claim 21, Thebaut substantially teaches the limitations of the claims:

a routing control device (configuration policies 115, policy driver 116, trigger 113 and action

space 117 on Fig. 6 and 6:49-67, 7:1-2) comprising:

a routing control database storing/managing a routing configuration policy (routing

control as part of outbound policies governing the network connectivity 8:18-32, including

routing policy 14:62-67 and 15:1-5, located in memory 192 of the control device PC

implementation, shown on Fig. 15 and 16:54-65) for remote networks (one of domains as shown

on Fig. 7 and 8 and 8:24-32).

Thebaut does not teach steps a-g of the claim 21.

Beshai teaches a routing control method comprising:

a) Receiving a network destination (selecting a sink node of network on Fig. 9 and 9:8-

17);

b) Determining the broadcast address corresponding to the destination (inherently part of

the system, because network controller needs the destination address to communicate

with the destination node);

c) Determining the peers having reachability to the destination (identifying nodes of the

network on Fig. 9 with associated cost);

d) Injecting a route to the address that includes the first peer (inherently part of the

system, because all source and destinations sets have to be identified 9:20-25);

e) Testing the path between the destination and first peer using metrics (quantify the

traffic demand as shown on the traffic matrix 1100 on Fig. 11 and 9:33-42, wherein

comparing each link capacity with a requested capacity is interpreted as link testing);

f) Repeating steps d and e for all peers (creating matrix 1100 on Fig. 11);

g) applying the path with the best metrics (selecting and applying the shortest route

considering the route traffic load 3:15-34).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to add steps a-g of Beshai to the system of Thebaut to improve the system routing

operation, by optimizing the routing path.

13.   Regarding claim 22, Beshai teaches monitoring the system for withdrawal of the

preferred path (monitoring links for overload and redirect the traffic 2:30-34) ;

Applying next preferred path to the system in response to the path withdrawal (using an alternate

route from the set 2:35-45).

14.   Regarding claims 25, 29, 30, 35, 37, Thebaut teaches a routing control device

(configuration policies 115, policy driver 116, trigger 113 and action space 117 on Fig. 6 and

6:49-67, 7:1-2) comprising:

a routing control database storing/managing a routing configuration policy (routing

control as part of outbound policies governing the network connectivity 8:18-32, including

routing policy 14:62-67 and 15:1-5, located in memory 192 of the control device PC

implementation, shown on Fig. 15 and 16:54-65) for multiple autonomous systems (networks as

shown on Fig. 7 and 8 and 8:24-32).

Thebaut does not teach a plurality of data collectors connected to the central server and a routing

control device.

Beshai teaches a system with routing policies in connection with a network (Fig. 1 and 4:32-62),

comprising:

a plurality of data collectors (node controllers 106 of data nodes 102 on Fig. 1), operable to

define and test traffic paths on the network (route vacancy 5:47-52) and generate path preference

data (allocating connection request to the appropriate route set 5:57-60);

a central server connected to the controllers to receive and merge the data from the collectors

(network controller 104 on Fig. 1 and 2:47-52);

a routing control device connected to the server, wherein the routing device can query the server

for a preferred path (sending the updated route vacancy to the network controller and receiving

in response from the network controller new routing paths 5:60-67 and 6:1-14).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to add data collectors connected to the central server and a routing control device of

Beshai to the system of Thebaut to improve the system routing operation, by optimizing the

routing path.

In addition, regarding claim 35, Beshai teaches the data collectors collocated with the

respective network nodes (Fig. 1).

In addition, regarding claim 37, Beshai teaches a routing control device (Network

controller 104 on Fig. 1 and 4:32-62) connected to a routing system (Fig. 1 and 4:47-53),

comprising:

a.   A routing path preference evaluator (overall routing table, comprising route sets

6:15-23, wherein route set contains different links which are selected and ranked 1:50-

57); and

b-c.   A path preference applicator operable to apply path preferences (distribute the

table to each node in the network 6:24-30) to a routing system (nodes 102 A-E on Fig. 1).

15.   Regarding claim 36, Beshai teaches testing the validity of the path (comparing path traffic load with actual path capacity 3:15-33).

16.   Claims 16, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thebaut in view of Admitted Prior Art in further view of Beshai.

Thebaut in view of Admitted Prior Art in further view of Beshai teaches all the limitations of claims 15 and 21.

Thebaut in view of Admitted Prior Art in further view of Beshai does not teach applying weights to a plurality of metrics to calculate the outcome.

Official notice is taken that applying weights to a plurality of metrics to calculate the outcome is well known and expected in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add applying weights to a plurality of metrics to calculate the outcome of the system of Thebaut in view of Admitted Prior Art in further view of Beshai to improve the system routing in multiple metrics environment.

17.   Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thebaut in view of Beshai.

18.   Regarding claims 26 and 27, Thebaut in view of Beshai teaches all the limitations of parent claim 25.

Thebaut in view of Beshai does not teach retrieving and assembling the topology of the network.

Official notice is taken that retrieving and assembling the topology of the network is well known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add retrieving and assembling the topology of the network to the system of Thebaut in view of Beshai to improve the system routing capabilities.

19.   Regarding claim 28, Thebaut in view of Beshai substantially teaches the limitations of parent claim 26.

Thebaut in view of Beshai does not teach the data structure as a tree with a collector as a root of the tree.

Official notice is taken that organizing the data structure as a tree with a collector/node as a root of the tree is well known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add organizing the data structure as a tree with a collector/node as a root of the tree in the system of Thebaut in view of Beshai to improve the system multicasting capabilities.

20.   Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art in view of Beshai.

Admitted Prior Art teaches mapping of path preferences associated with computer network, comprising:

        a.   Receiving a plurality of network routes, traversing an autonomous systems,

        b.   Selecting a network route from the plurality of network routes,

        c.   Defining the path for the network route, including at least one intermediate node,

        d.   Repeating the a-c steps for all network routes (selecting best path out of plurality of possible network routes, using Autonomous Systems Path metrics, inherently

including at least one intermediate node, because connections over Internet will include

least one intermediate node, Background of the Invention, pages 1 and 2).

Admitted Prior Art does not teach testing the performance of the path to one of the following

metrics: round trip, jitter and packet loss and storing path and performance data for each

intermediate node in the path.

Beshai teaches testing the performance of the path to one metric and storing path and

performance data for each intermediate node in the path (creating a Table 1000 on Fig. 10,

including routes with intermediate nodes, for example DCA, for the network shown on Fig. 9,

wherein traffic load comparison/testing for all nodes and stored in the network controller

memory 4:47-60).

Official notice is taken that testing the performance of the path to the packet loss metric is well

known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made

to add teaches testing the performance of the path to one metric and storing path and

performance data for each intermediate node in the path of Beshai testing the performance of the

path to the packet loss metric per Official Notice to the Admitted Prior Art system and to

improve the system routing capabilities.

21.   Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior

Art in view of Beshai in view of Kodialam (US 6,778,531).

Admitted Prior Art in view of Beshai substantially teaches the limitations of parent claim 31

(see the rejection of claim 31 above).

Admitted Prior Art in view of Beshai does not teach defining the ingress interfaces of a node

and heuristically determining the egress interfaces.

Kodialam teaches defining the ingress interfaces of a node and heuristically determining the

egress interfaces (3:50-67 and 4:1-5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made

to add defining the ingress interfaces of a node and heuristically determining the egress

interfaces of Kodialam to the system of Admitted Prior Art in view of Beshai to improve the

system multicasting capabilities.

Allowable Subject Matter

22.   Claims 33 and 34 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

Response to Arguments

23.   Applicant's arguments with respect to claims 1-37 have been considered but are moot in

view of the new ground(s) of rejection, necessitated by the Amendment.

24.   On page 12 of the Response, Applicant argues that Beshai does not teach monitoring for

withdrawal of a routing path.

Examiner respectfully disagrees.

Beshai teaches monitoring for the topology changes, as removal or addition of nodes and links

and updating the routing table on the monitoring results 12:34-42.

25.   Applicant has not attempted to challenge Examiner's taking of Official Notices in the

previous Office Action. Therefor, the presentation of references to substantiate the Official

Notices is not deemed necessary. The Examiner's taking of Official Notices has been

maintained.

Conclusion

26.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dmitry Levitan whose telephone number is (571) 272-3093. The

examiner can normally be reached on 8:30 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dmitry Levitan
Patent Examiner.
06/23/05

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